AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method comprising:

transmitting a first current through a diode;

determining a first voltage across the diode, the first voltage associated with the first current;

transmitting a second current through the diode;

determining a second voltage across the diode, the second voltage associated with the second current;

transmitting a third current through the diode;

determining a third voltage across the diode, the third voltage associated with the third current; and

determining a temperature based at least in part on the first voltage, the second voltage and the third voltage.

wherein a magnitude of the third current is substantially equal to a geometric mean of a magnitude of the first current and a magnitude of the second current.

2. (original) A method according to Claim 1, wherein determining the temperature comprises:

determining the effective series resistance of a path associated with the diode based at least in part on the first voltage, the second voltage and the third voltage.

3. (currently amended) A method according to Claim 21, wherein determining the temperature comprises determining the value of

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 $q(v_1 - v_2 - (i_1 - i_2) \times R_s)/(kn)ln(i_1/i_2)$, wherein $R_s = \underline{is}$ substantially equal to $(v_1 + v_2 - 2 v_3)/(i_1 + i_2 - 2 i_3)$ and corresponds to the effective series resistance, and

wherein v_1 corresponds to the first voltage, v_2 corresponds to the second voltage, v_3 corresponds to the third voltage, i_1 corresponds to the first current, i_2 corresponds to the second current, i_3 corresponds to the third current, k corresponds to Boltzmann's Constant, k corresponds to an ideality factor associated with the diode, and k corresponds to the charge of a electron.

- 4. (cancelled)
- 5. (currently amended) A method comprising:

_according to Claim 1, wherein determining the temperature comprises determining the value of

transmitting a first current through a diode;

determining a first voltage across the diode, the first voltage associated with the first current;

transmitting a second current through the diode;

determining a second voltage across the diode, the second voltage associated with the second current;

transmitting a third current through the diode;

determining a third voltage across the diode, the third voltage associated with the third current; and

determining a temperature based at least in part on (a/(d-bc))($v_1 - v_2 - b(v_1 + v_2 - 2 v_3)$, wherein

$$a = q/kn$$
, $b = (i_1 - i_2)/(i_1 + i_2 - 2 i_3)$, $c = ln[(i_1i_2)/i_3^2]$, and $d = ln(i_1/i_2)$, and

wherein v_1 corresponds to the first voltage, v_2 corresponds to the second voltage, v_3 corresponds to the third voltage, i_1 corresponds to the first current, i_2 corresponds to the second

current, i₃ corresponds to the third current, k corresponds to Boltzmann's Constant, n corresponds to an ideality factor associated with the diode, and q corresponds to the charge of a electron.

- 6. (original) A method according to Claim 5, wherein a magnitude of the first current, a magnitude of the third current, and a magnitude of the second current substantially conform to a geometric progression.
 - 7. (currently amended) An apparatus comprising:
 - a first diode;

a device coupled to the first diode to transmit a first current through the first diode, to determine a first voltage across the first diode, the first voltage associated with the first current, to transmit a second current through the first diode, to determine a second voltage across the first diode, the second voltage associated with the second current, to transmit a third current through the first diode, to determine a third voltage across the first diode, the third voltage associated with the third current, and to determine a temperature of the first diode based at least in part on the first voltage, the second voltage and the third voltage, wherein a magnitude of the third current is substantially equal to a geometric mean of a magnitude of the first current and a magnitude of the second current.

- 8. (original) An apparatus according to Claim 7, the device to determine the temperature by determining the effective series resistance of a path associated with the first diode based at least in part on the first voltage, the second voltage and the third voltage.
- 9. (currently amended) An apparatus according to Claim <u>87</u>, the device to determine the temperature by determining the value of

 $q(v_1 - v_2 - (i_1 - i_2) \times R_s)/(kn)ln(i_1/i_2)$, wherein $R_s = (v_1 + v_2 - 2 v_3)/(i_1 + i_2 - 2 i_3)$ and corresponds to the effective series resistance, and

wherein v_1 corresponds to the first voltage, v_2 corresponds to the second voltage, v_3 corresponds to the third voltage, i_1 corresponds to the first current, i_2 corresponds to the second current, i_3 corresponds to the third current, k corresponds to Boltzmann's Constant, k corresponds to an ideality factor associated with the diode, and k corresponds to the charge of a electron.

10. (cancelled)

11. (currently amended) An apparatus comprising:

according to Claim 7, the device to determine the temperature by determining the value

a first diode;

of

a device coupled to the first diode to transmit a first current through the first diode, to determine a first voltage across the first diode, the first voltage associated with the first current, to transmit a second current through the first diode, to determine a second voltage across the first diode, the second voltage associated with the second current, to transmit a third current through the first diode, to determine a third voltage across the first diode, the third voltage associated with the third current, and to determine a temperature of the first diode based at least in part on $(a/(d-bc))(v_1 - v_2 - b(v_1 + v_2 - 2v_3))$, wherein

$$a = q/kn$$
, $b = (i_1 - i_2)/(i_1 + i_2 - 2 i_3)$, $c = ln[(i_1i_2)/i_3^2]$, and $d = ln(i_1/i_2)$, and

wherein v₁ corresponds to the first voltage, v₂ corresponds to the second voltage, v₃ corresponds to the third voltage, i₁ corresponds to the first current, i₂ corresponds to the second current, i₃ corresponds to the third current, k corresponds to Boltzmann's Constant, n corresponds to an ideality factor associated with the diode, and q corresponds to the charge of a electron.

12. (original) An apparatus according to Claim 11, wherein a magnitude of the first current, a magnitude of the third current, and a magnitude of the second current substantially conform to a geometric progression.

13. (original) An apparatus according to Claim 7, further comprising: a second diode,

wherein the device is coupled to the second diode to transmit a fourth current through the second diode, to determine a fourth voltage across the second diode, the fourth voltage associated with the fourth current, to transmit a fifth current through the second diode, to determine a fifth voltage across the second diode, the fifth voltage associated with the fifth current, to transmit a sixth current through the second diode, to determine a sixth voltage across the second diode, the sixth voltage associated with the sixth current, and to determine a temperature of the second diode based at least in part on the third voltage, the fourth voltage and the fifth voltage.

- 14. (original) An apparatus according to Claim 13, wherein the first diode and the second diode are integrated into a same substrate.
- 15. (original) An apparatus according to Claim 7, wherein the device comprises an analog-to-digital converter and a microcontroller.
- 16. (original) An apparatus according to Claim 15, wherein the first diode and the device are integrated into a same substrate.
 - 17. (currently amended) A system comprising: an integrated circuit comprising a first diode;

a device coupled to the first diode to transmit a first current through the first diode, to determine a first voltage across the first diode, the first voltage associated with the first current, to transmit a second current through the first diode, to determine a second voltage across the first diode, the second voltage associated with the second current, to transmit a third current through the first diode, to determine a third voltage across the first diode, the third voltage associated with the third current, and to determine a temperature of the first diode based at least in part on the first voltage, the second voltage and the third voltage, a magnitude of the third current being substantially equal to a geometric mean of a magnitude of the first current and a magnitude of the second current; and

a double data rate memory electrically coupled to the integrated circuit.

- 18. (original) A system according to Claim 17, the device to determine the temperature by determining the effective series resistance of a path associated with the first diode based at least in part on the first voltage, the second voltage and the third voltage.
- 19. (currently amended) A system according to Claim 1817, the device to determine the temperature by determining the value of

$$q(v_1-v_2-(i_1-i_2) \times R_s)/(kn)ln(i_1/i_2), \text{ wherein } R_s=(v_1+v_2-2 \ v_3)/(i_1+i_2-2 \ i_3) \text{ and}$$
 corresponds to the effective series resistance, and

wherein v_1 corresponds to the first voltage, v_2 corresponds to the second voltage, v_3 corresponds to the third voltage, i_1 corresponds to the first current, i_2 corresponds to the second current, i_3 corresponds to the third current, k corresponds to Boltzmann's Constant, k corresponds to an ideality factor associated with the diode, and k corresponds to the charge of a electron.

20. (cancelled)

21. (original) A system according to Claim 17, the device to determine the temperature by determining the value of

$$(a/(d-bc))(v_1 - v_2 - b(v_1 + v_2 - 2 v_3))$$
, wherein $a = q/kn$, $b = (i_1 - i_2)/(i_1 + i_2 - 2 i_3)$, $c = ln[(i_1i_2)/i_3^2]$, and $d = ln(i_1/i_2)$, and

wherein v_1 corresponds to the first voltage, v_2 corresponds to the second voltage, v_3 corresponds to the third voltage, i_1 corresponds to the first current, i_2 corresponds to the second current, i_3 corresponds to the third current, k corresponds to Boltzmann's Constant, k corresponds to an ideality factor associated with the diode, and k corresponds to the charge of a electron.

- 22. (cancelled)
- 23. (original) A system according to Claim 17, wherein the integrated circuit comprises a microprocessor.